

FIG. 1

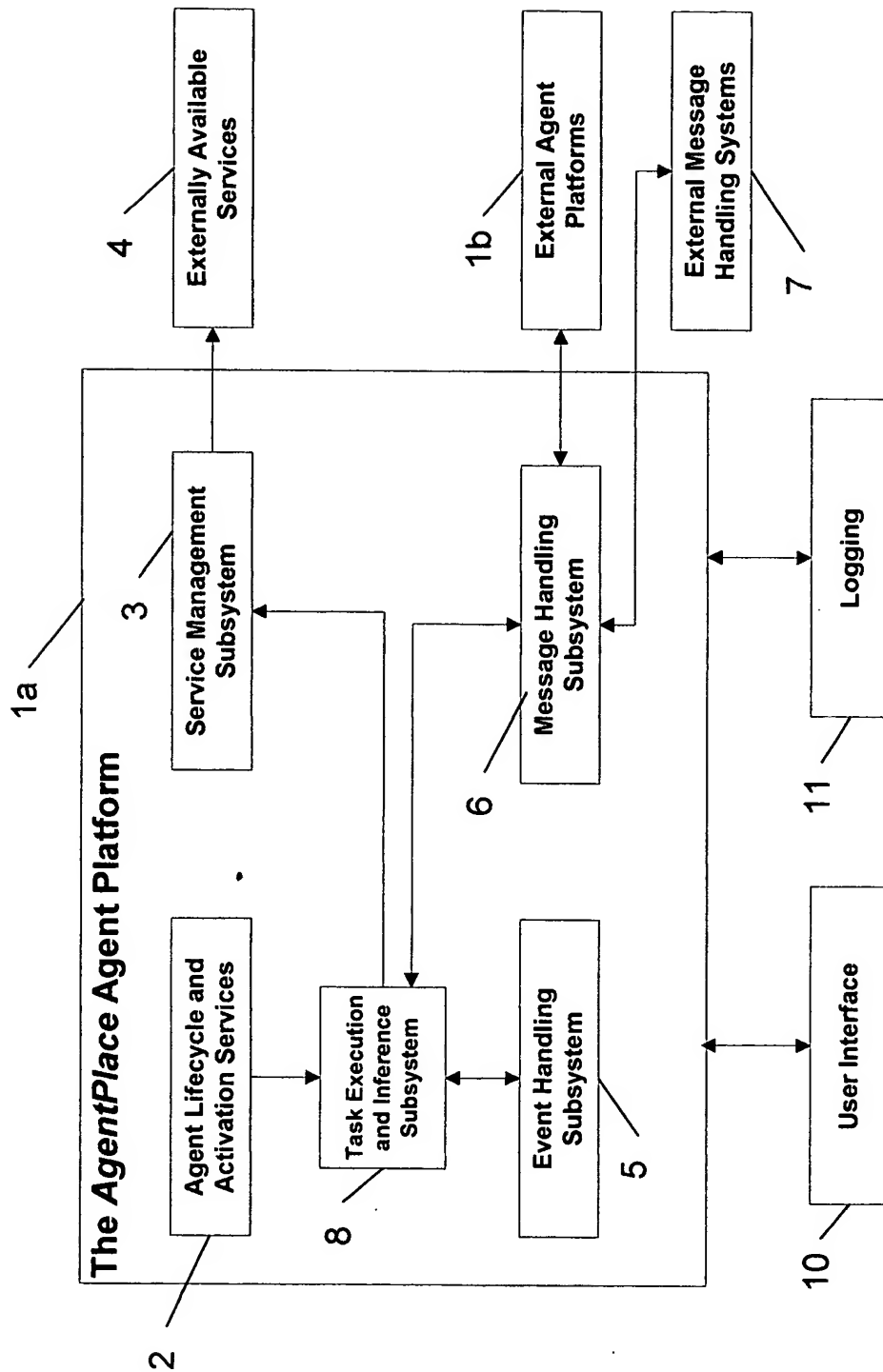


FIG. 2

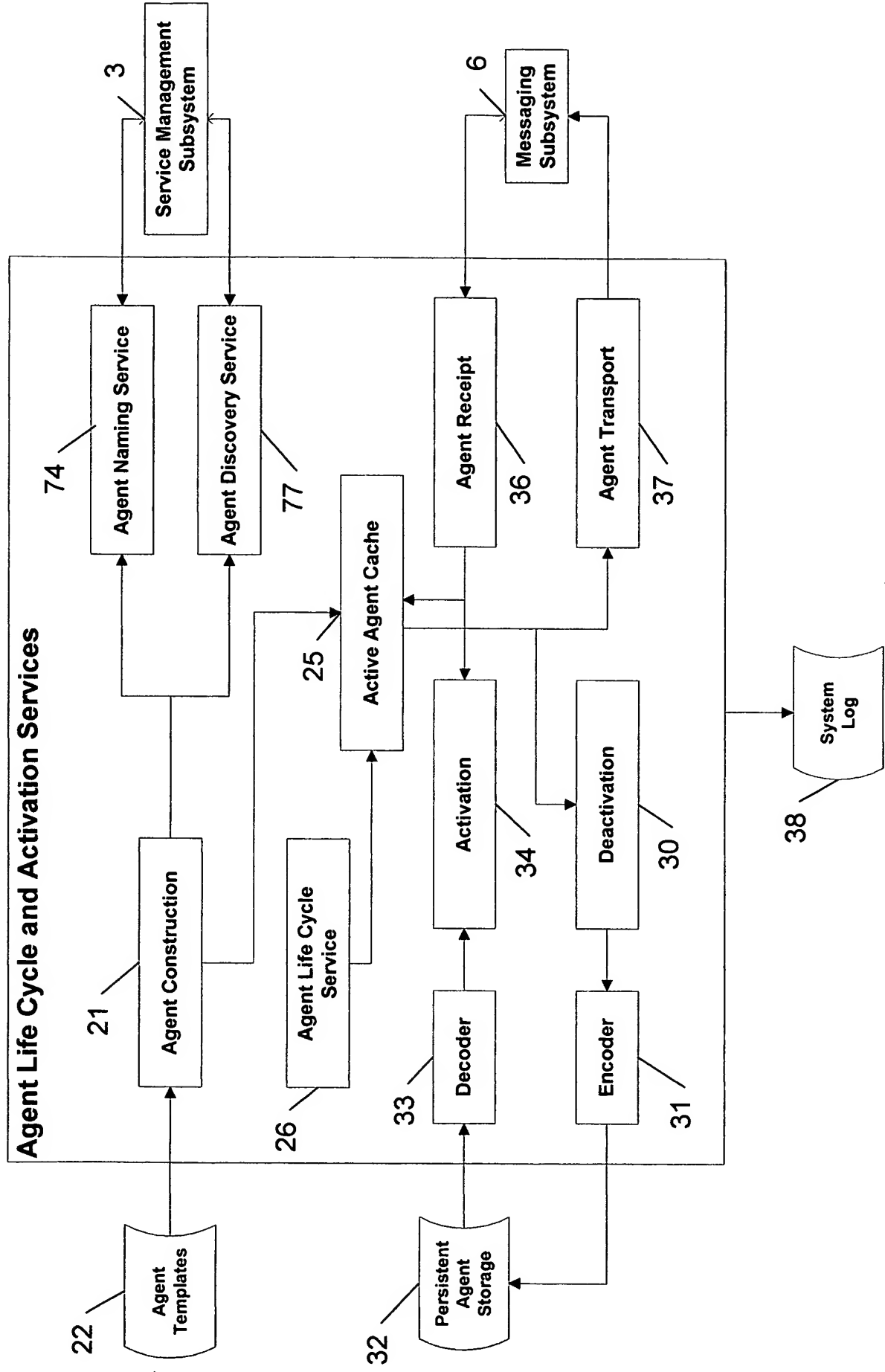


FIG. 3

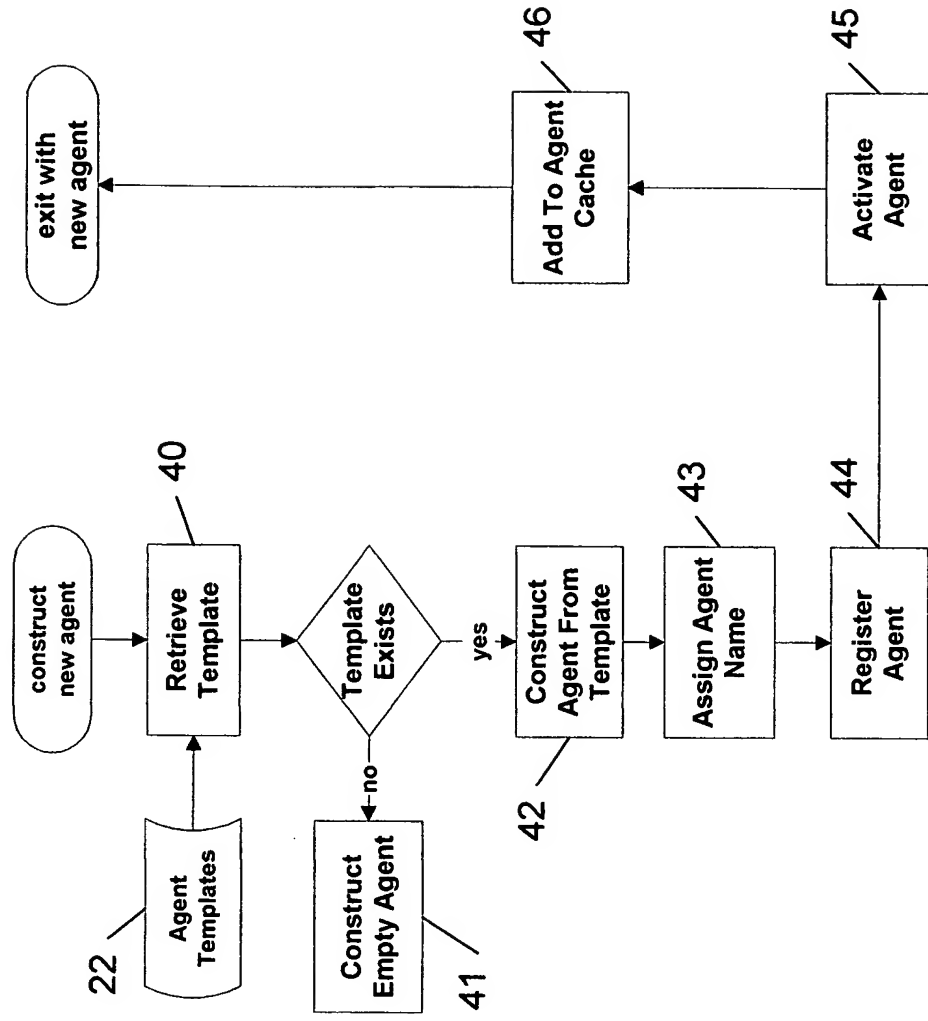


FIG. 4

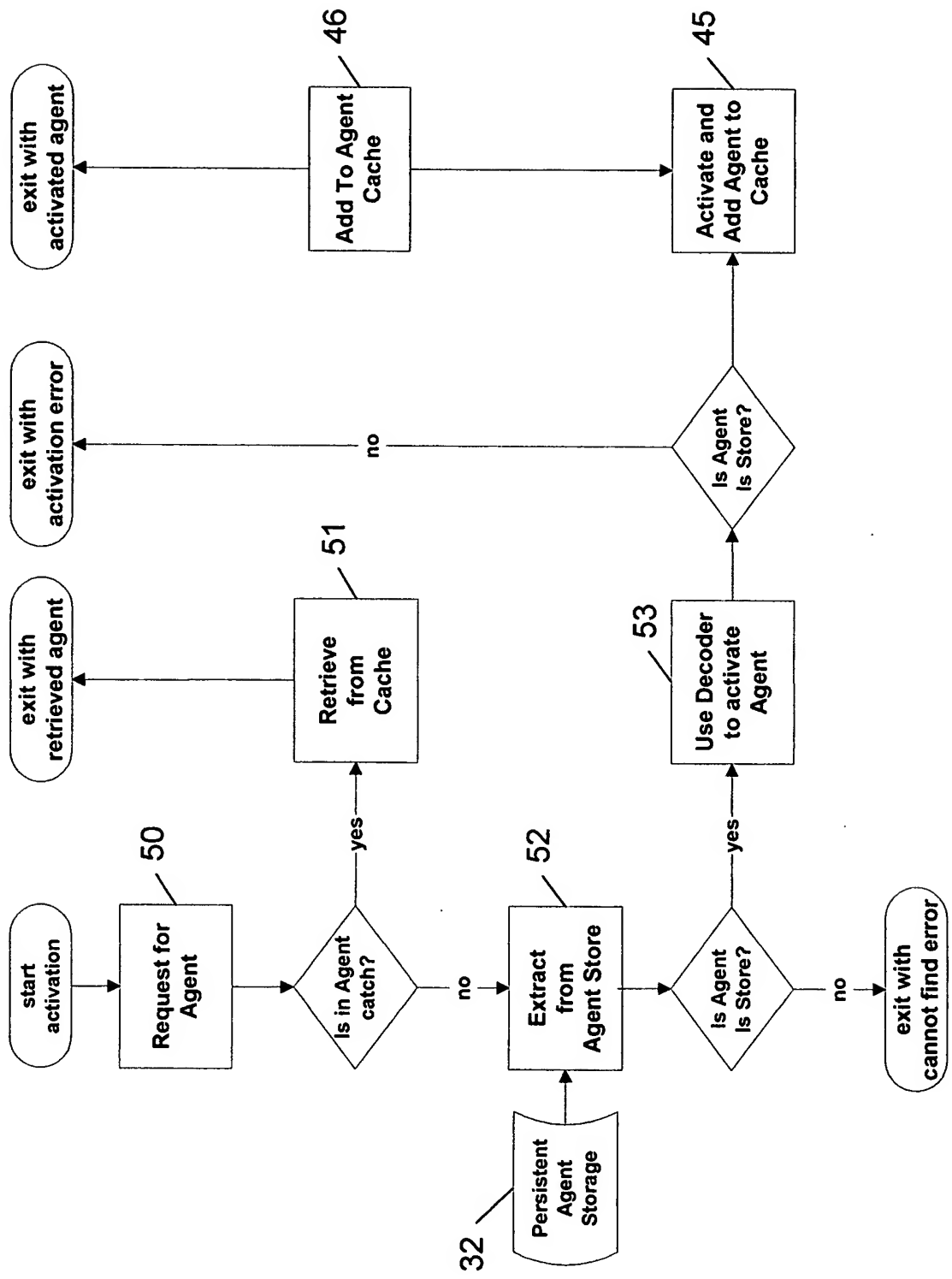


FIG. 5

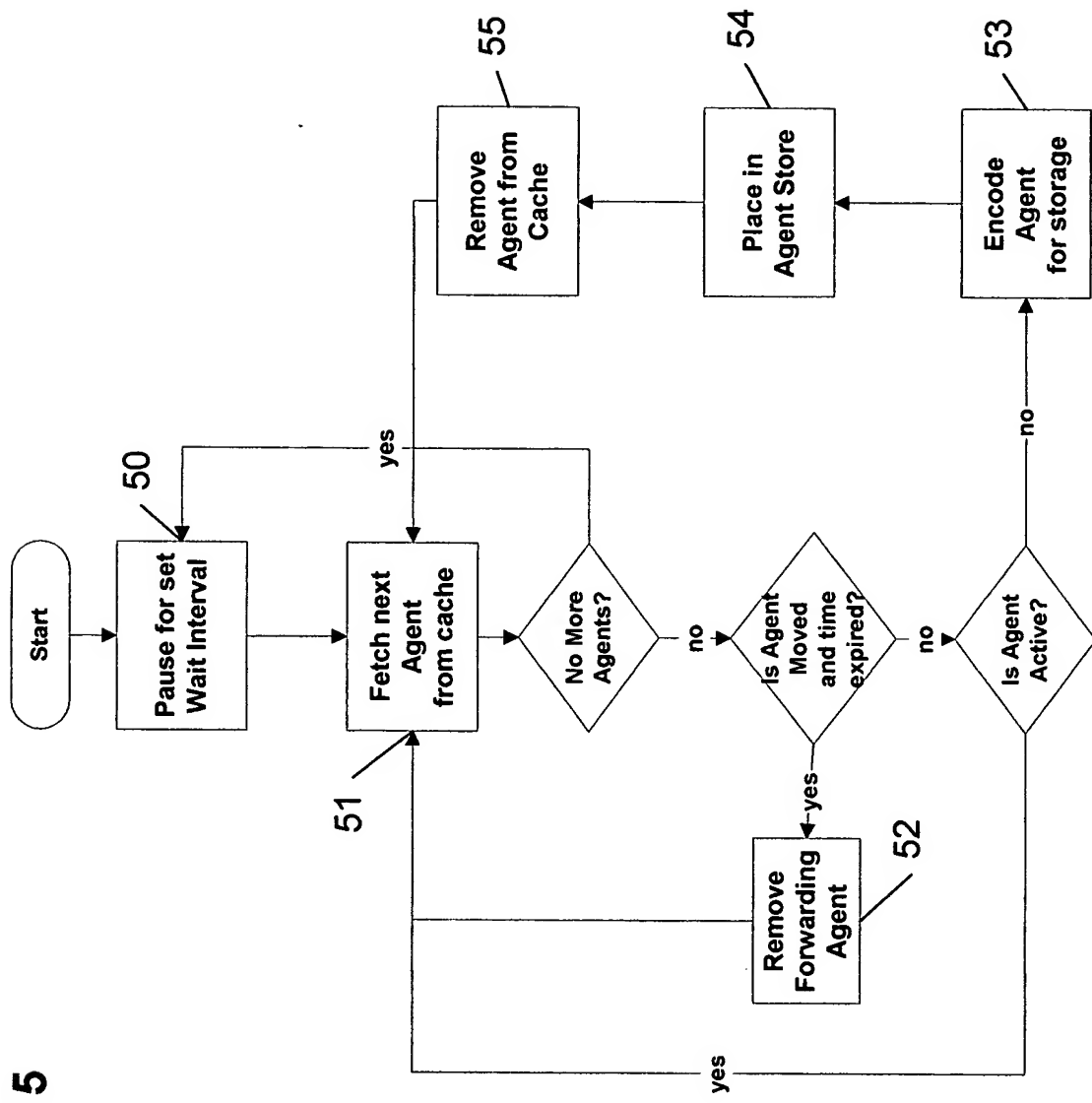


FIG. 6

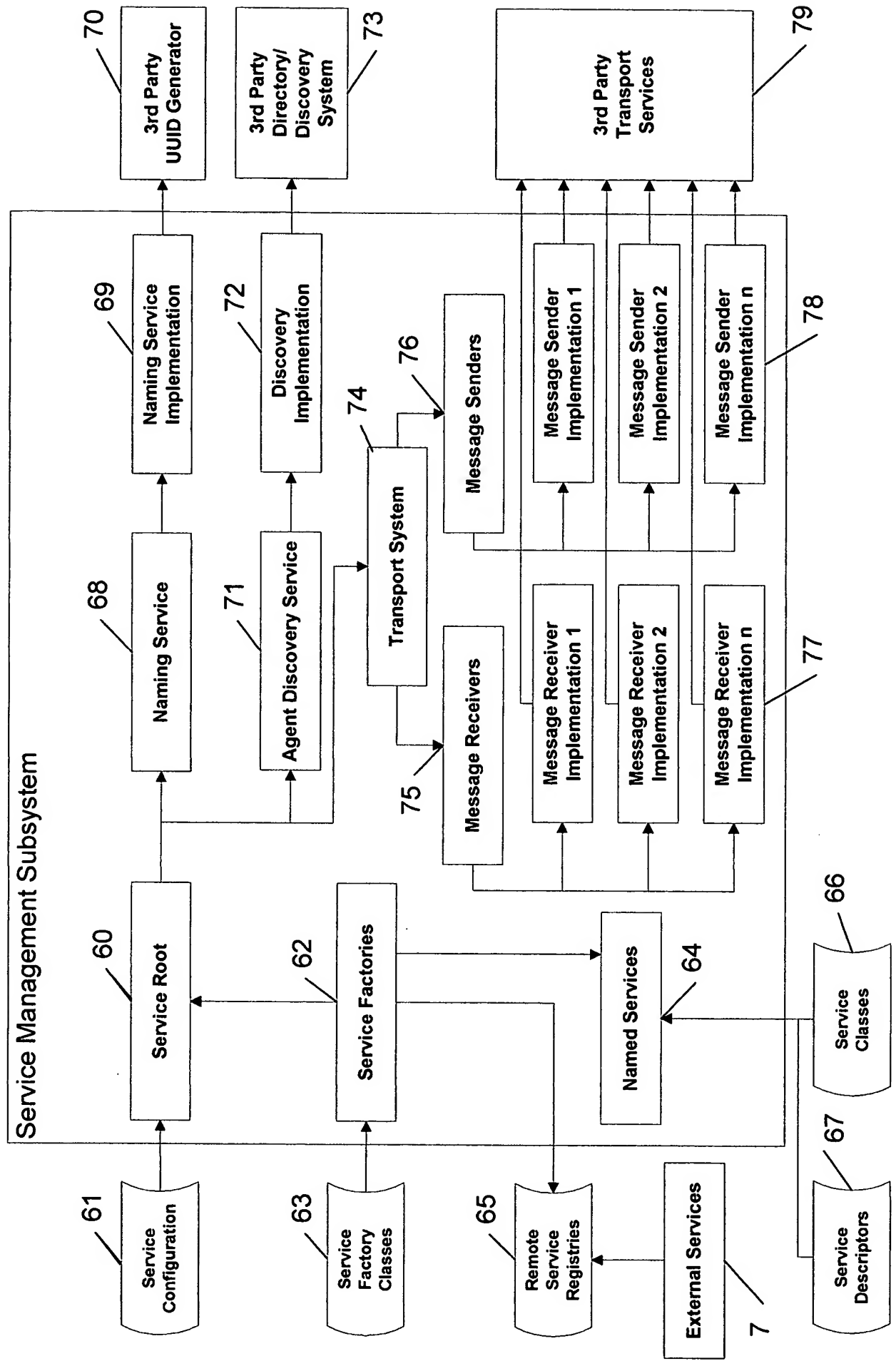


FIG. 7

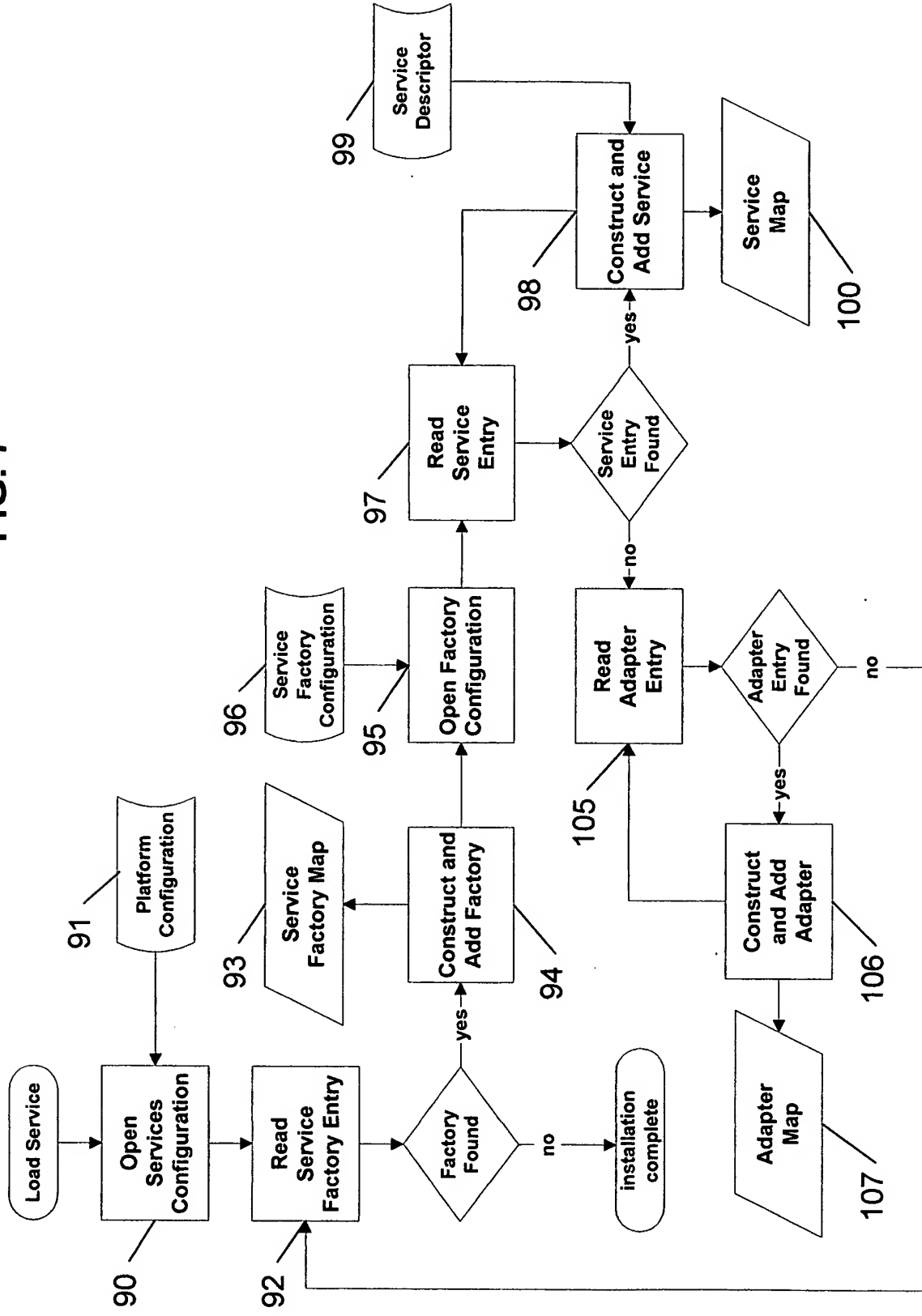


FIG. 8

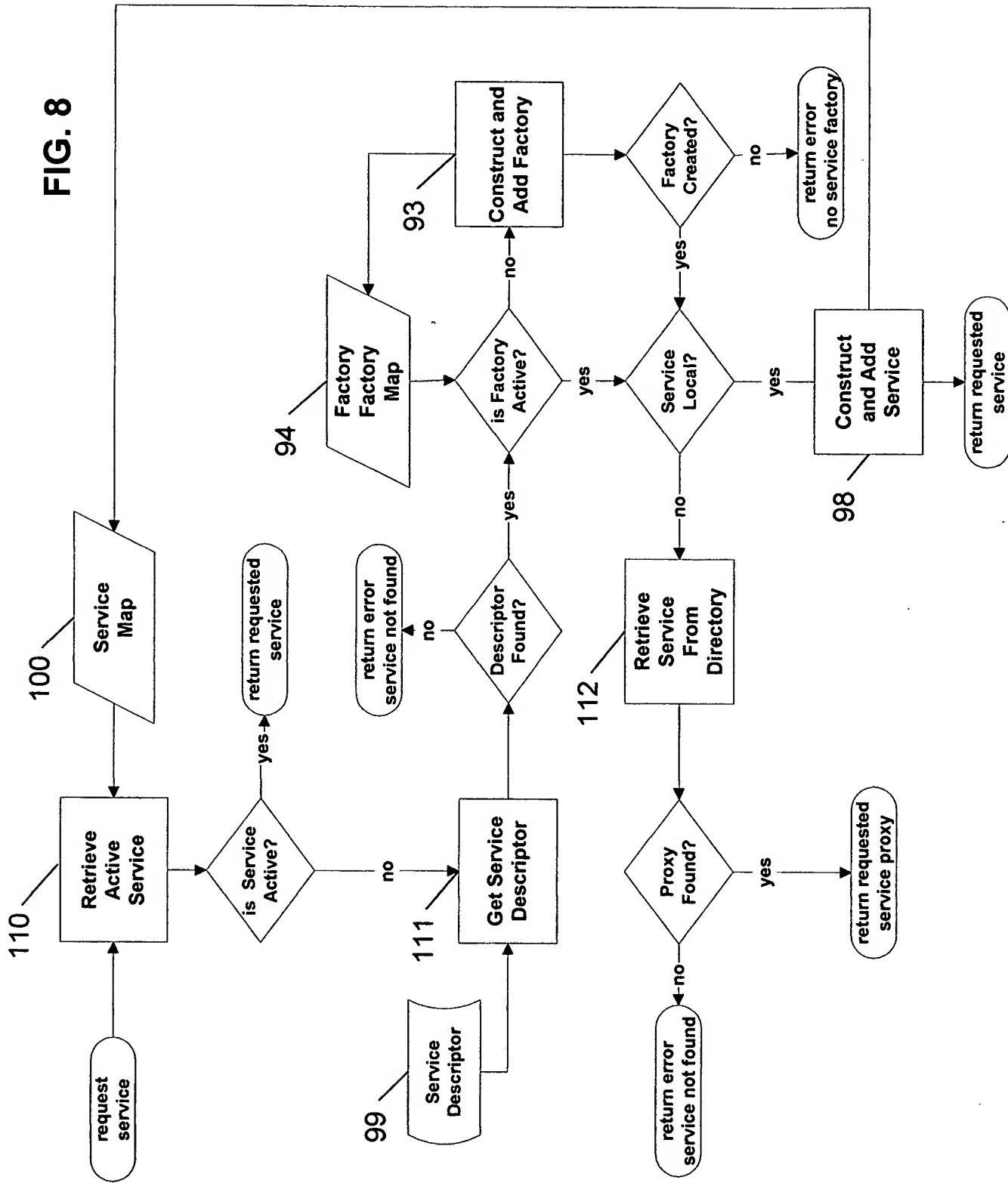


FIG. 9

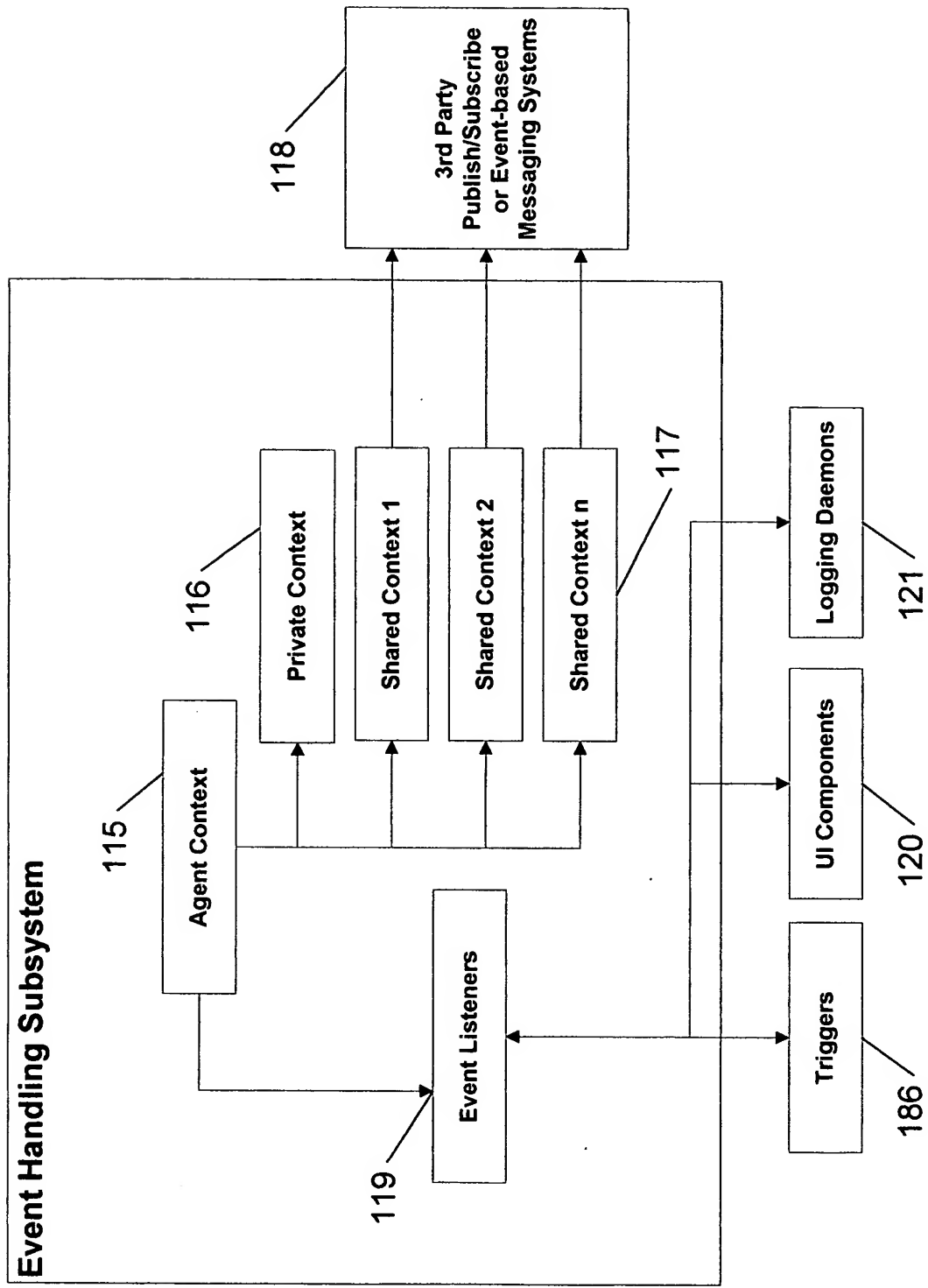


FIG. 10

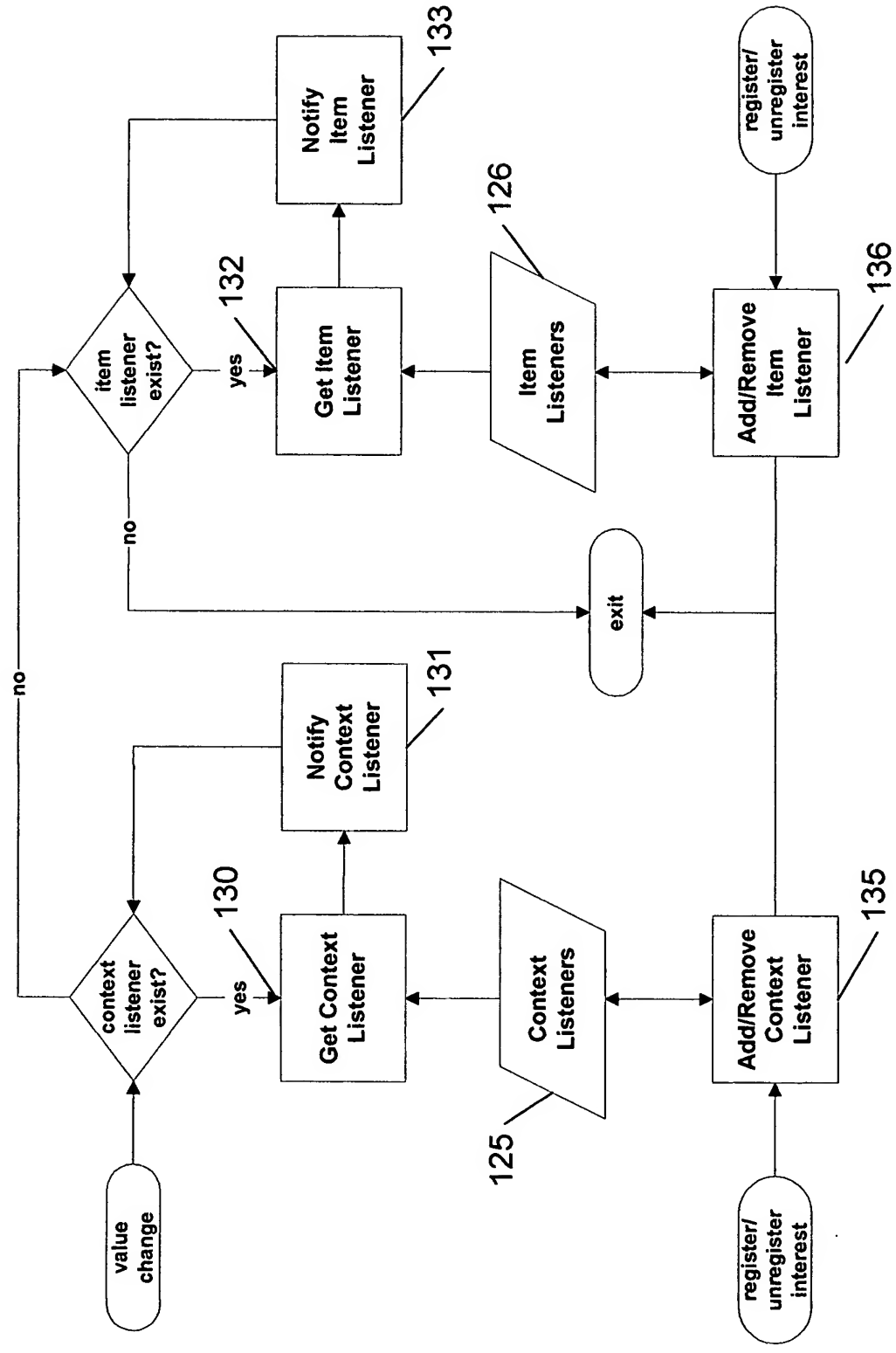


FIG. 11

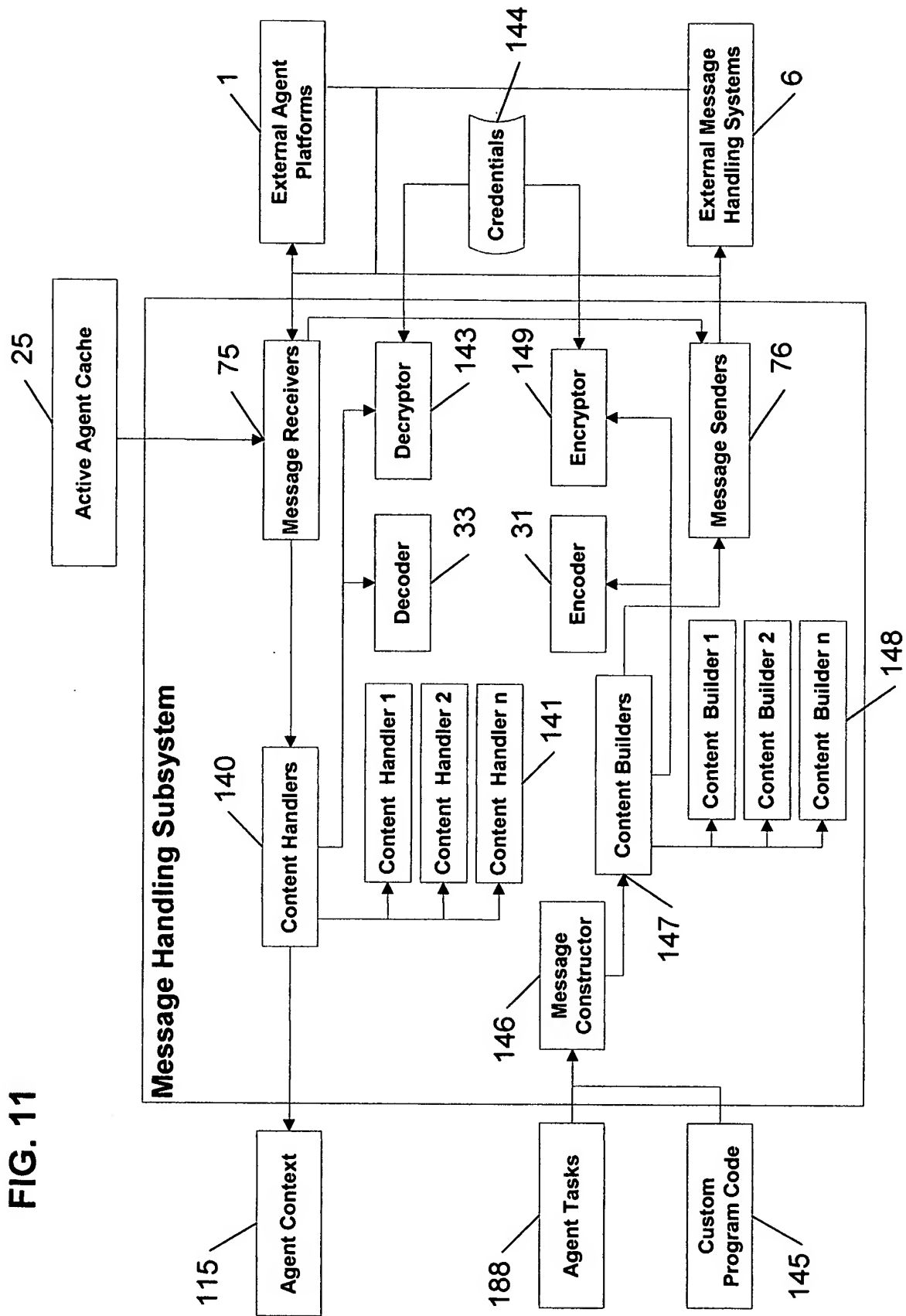


FIG. 12

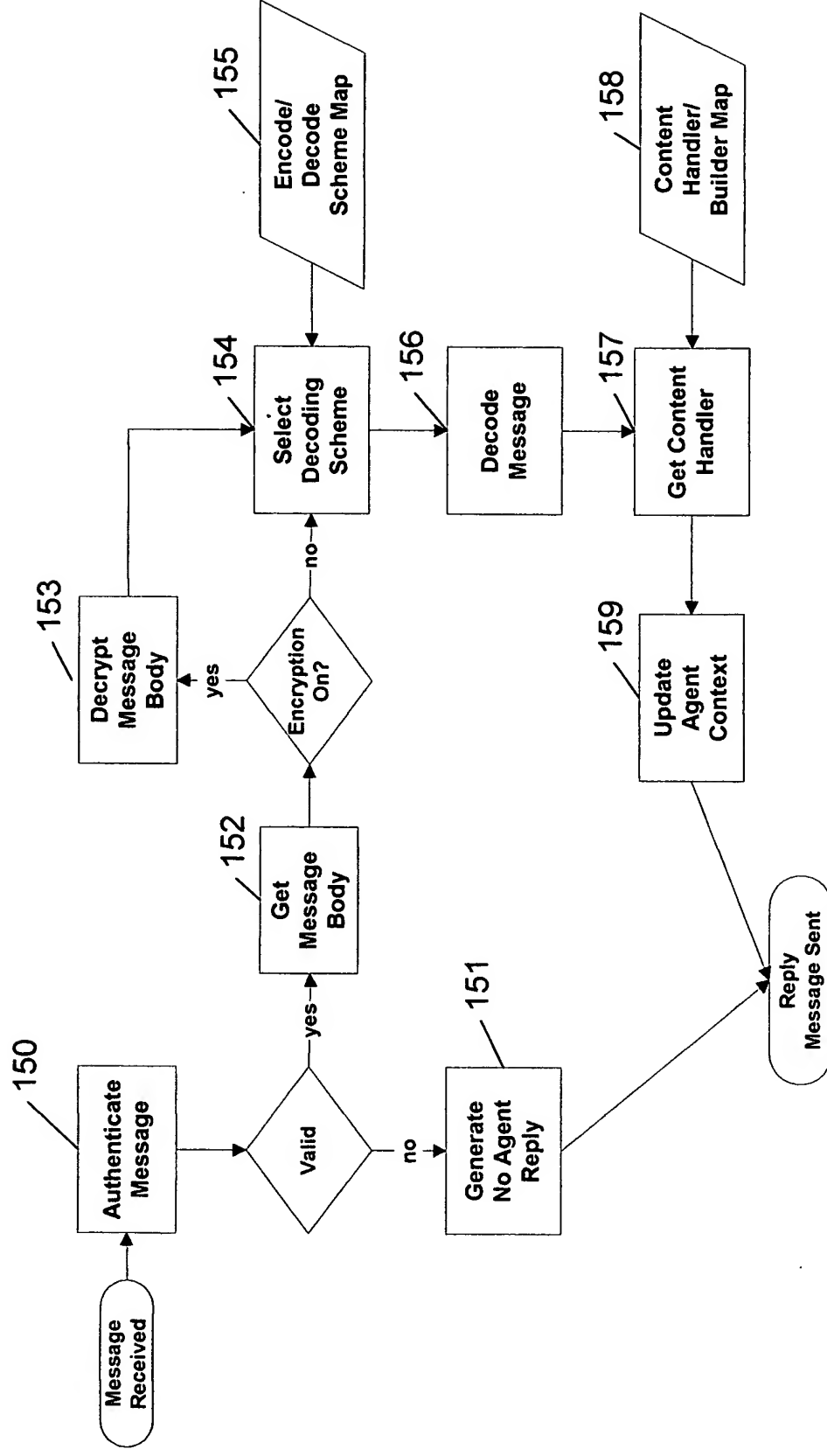


FIG. 13

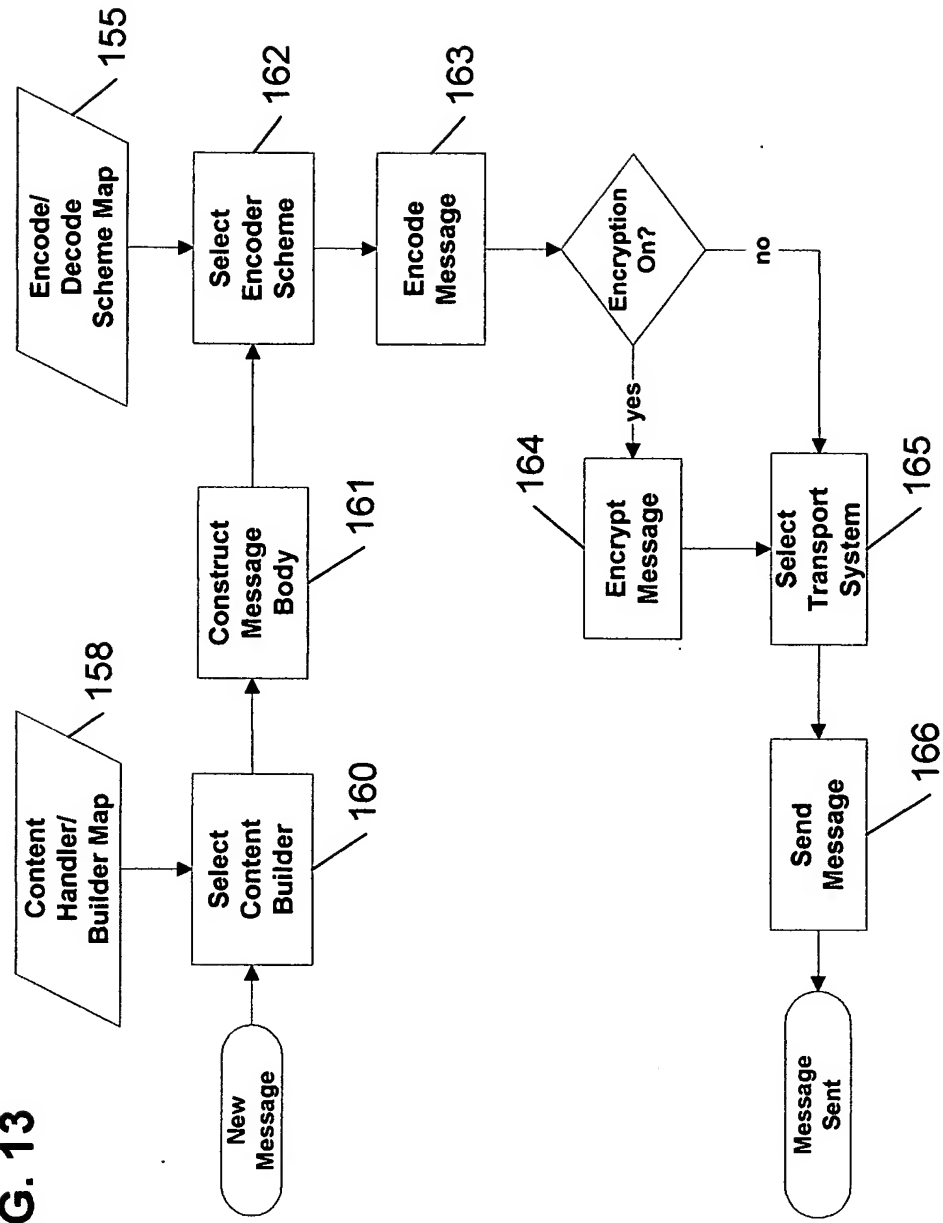


FIG. 14

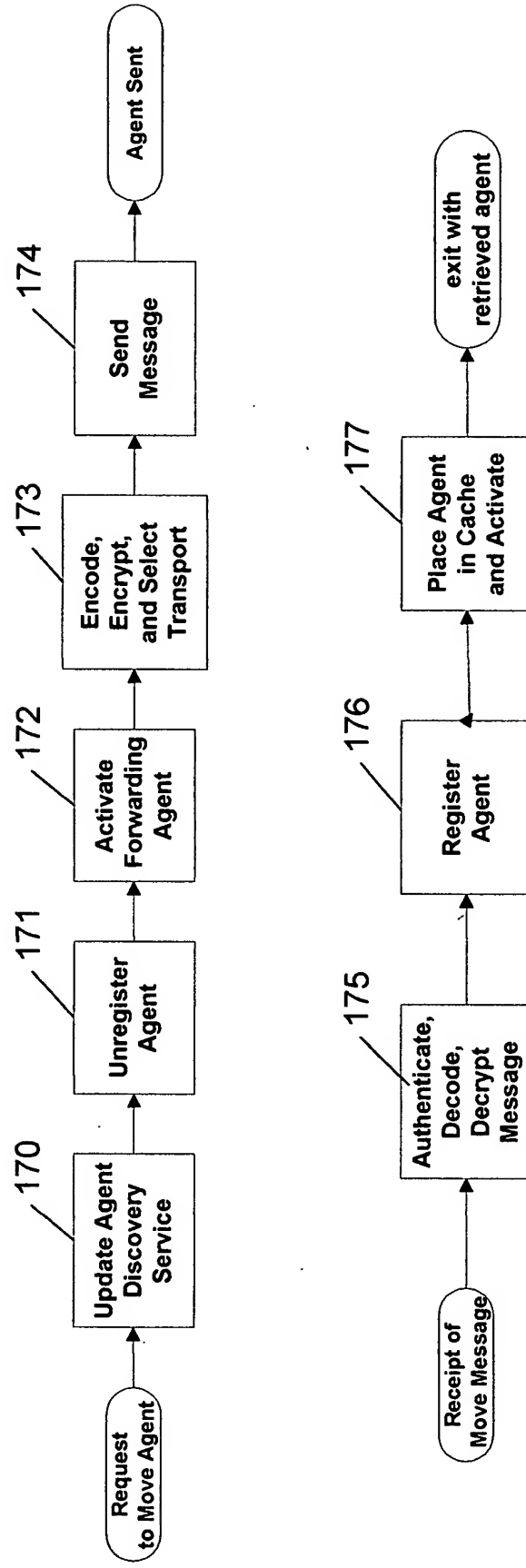


FIG. 15

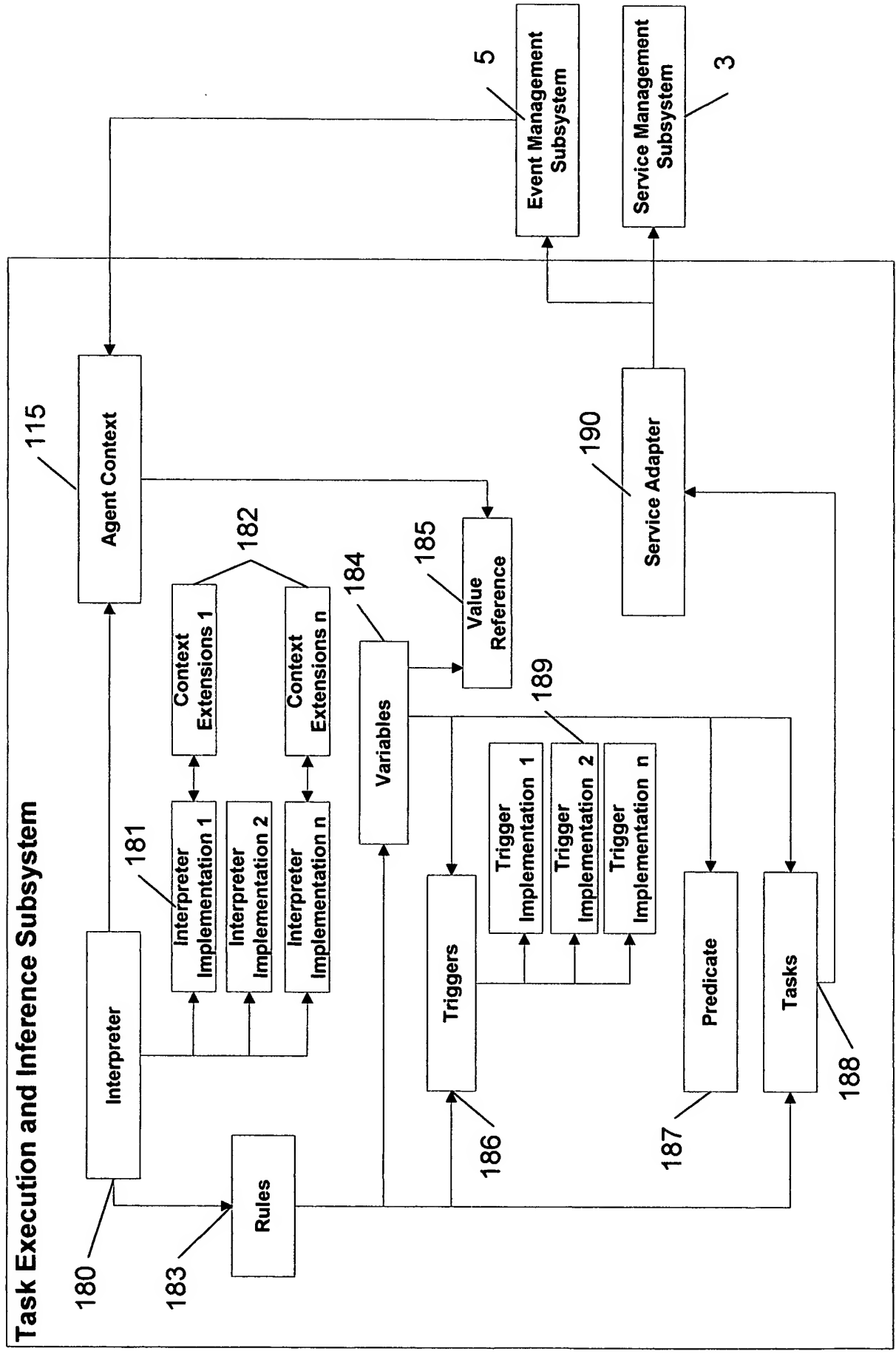


FIG. 16

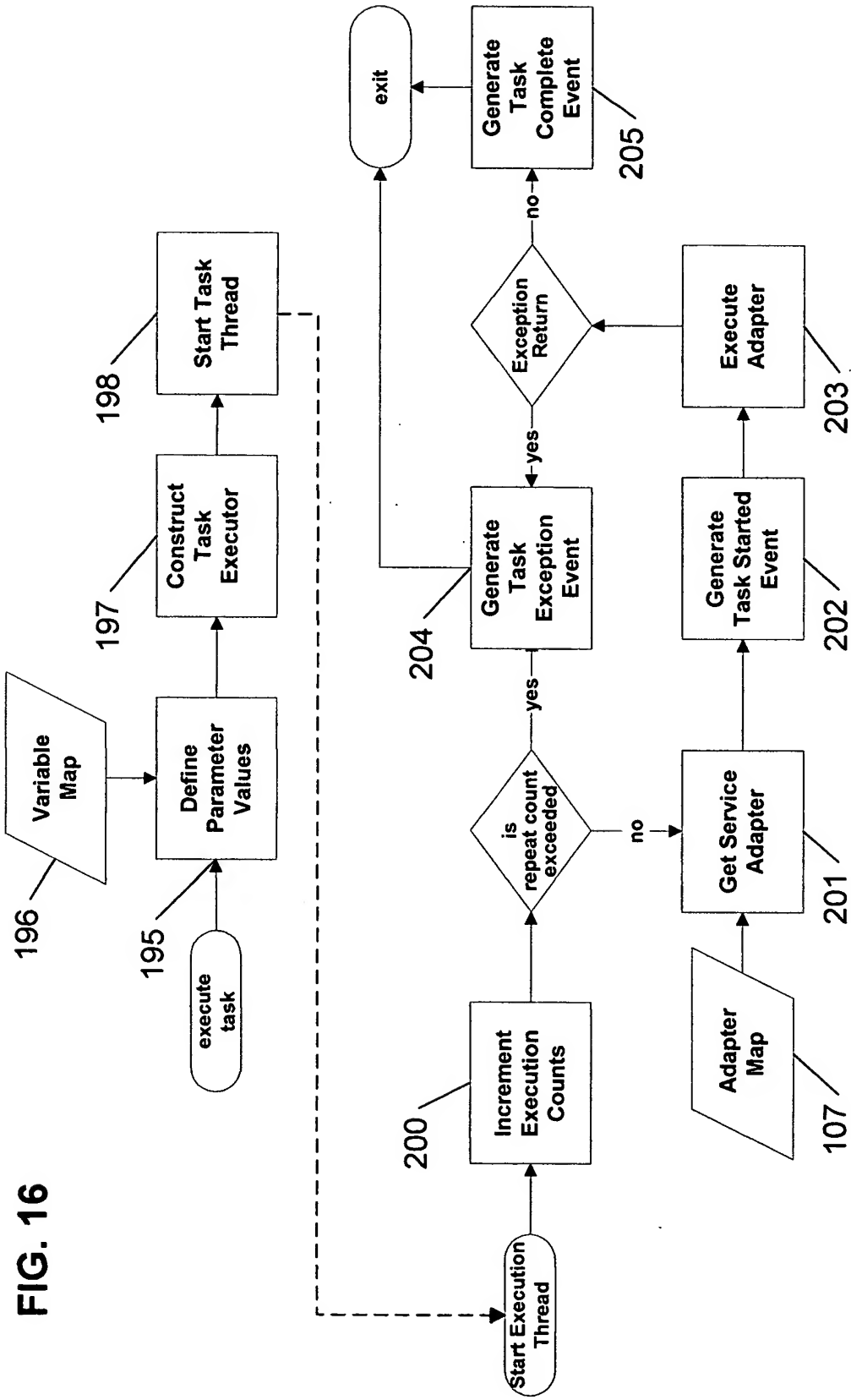


FIG. 17

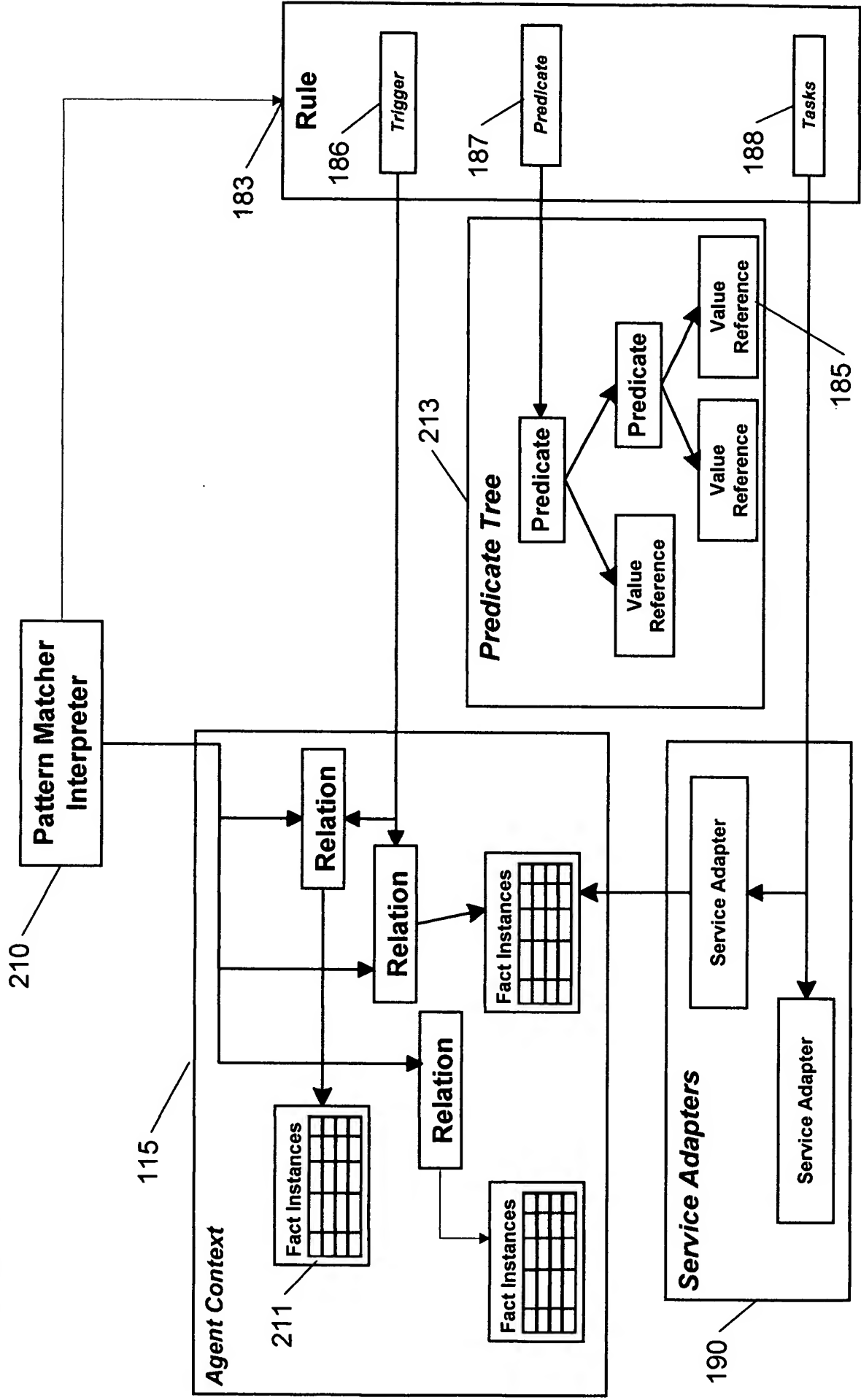


FIG. 18

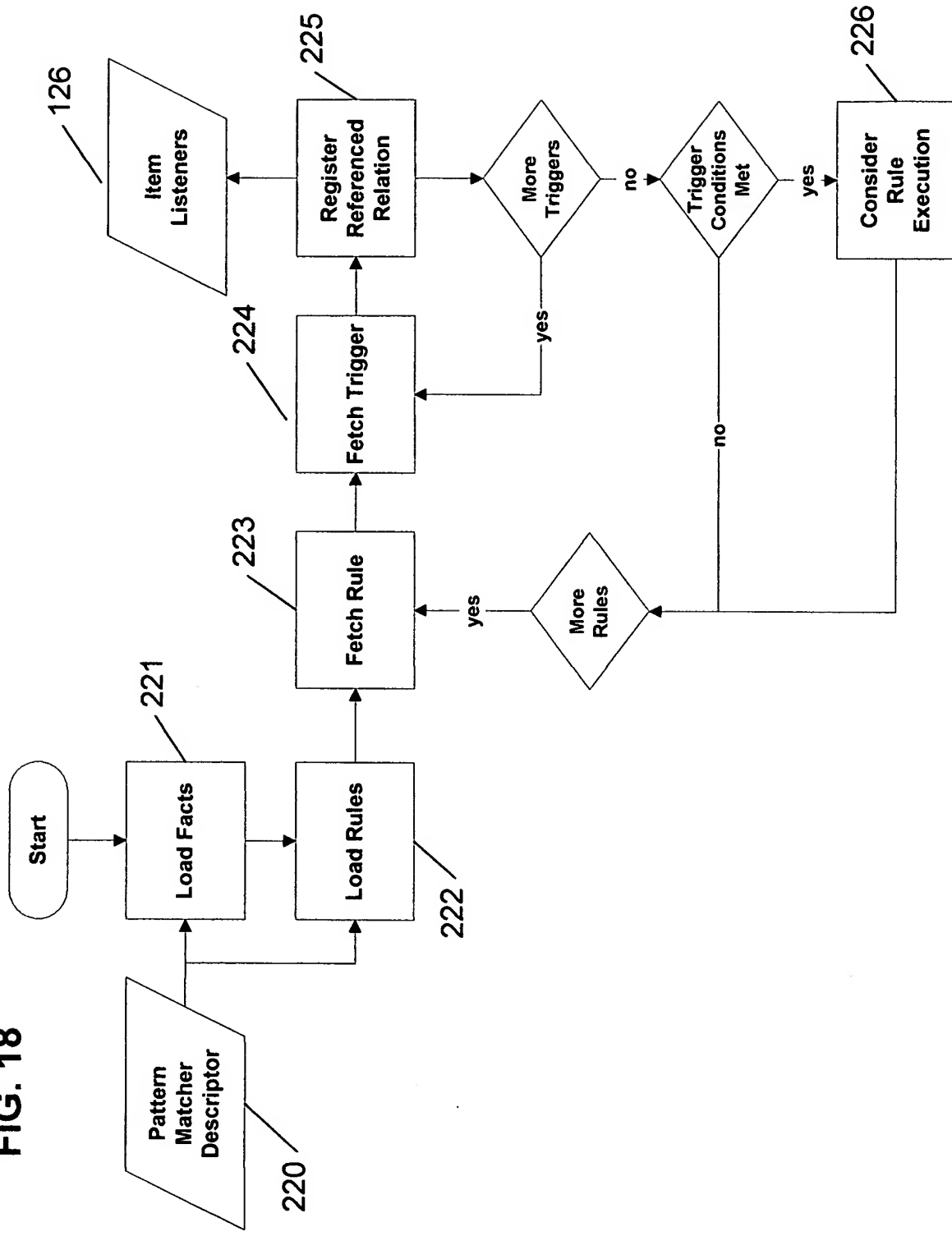


FIG. 19

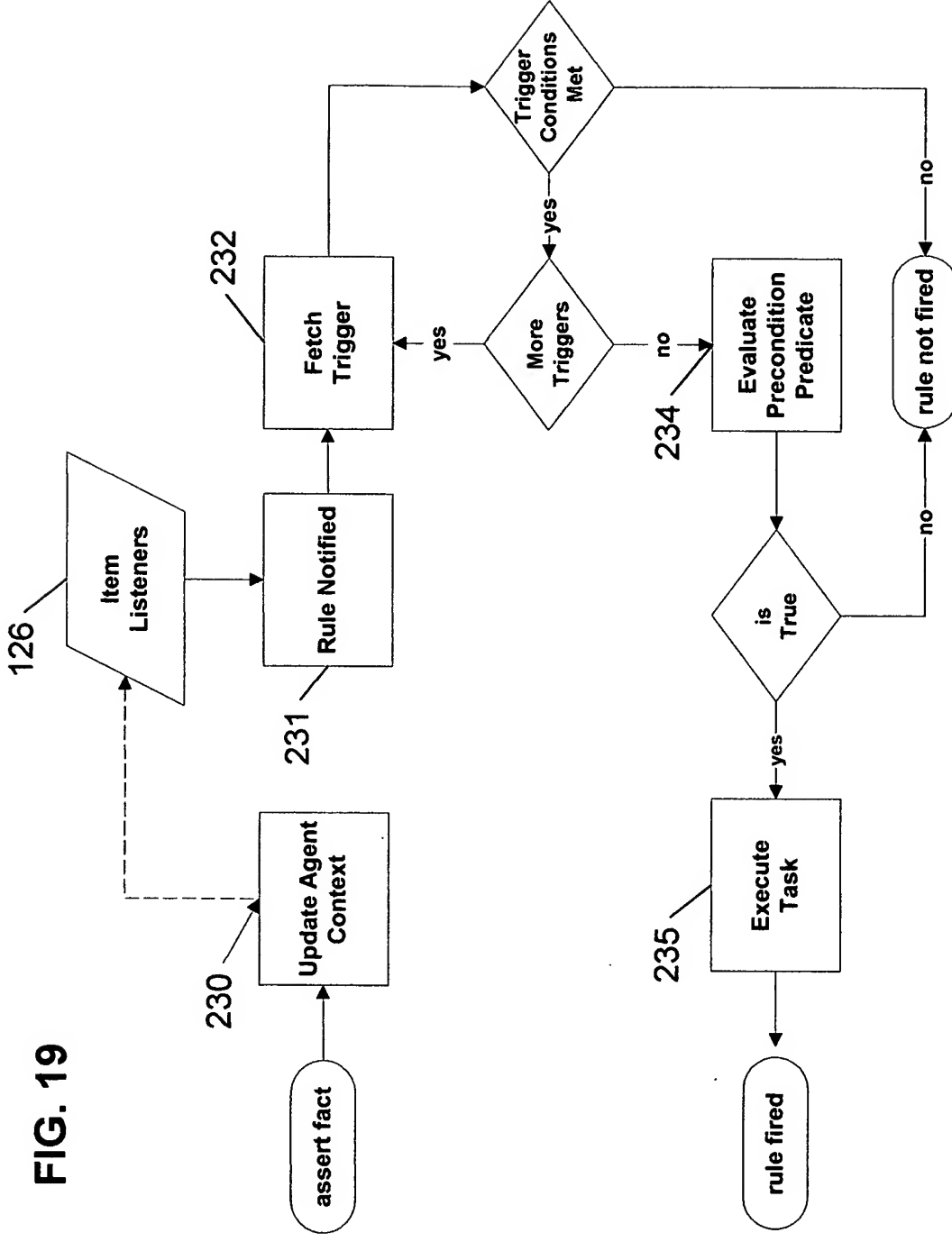


FIG. 20

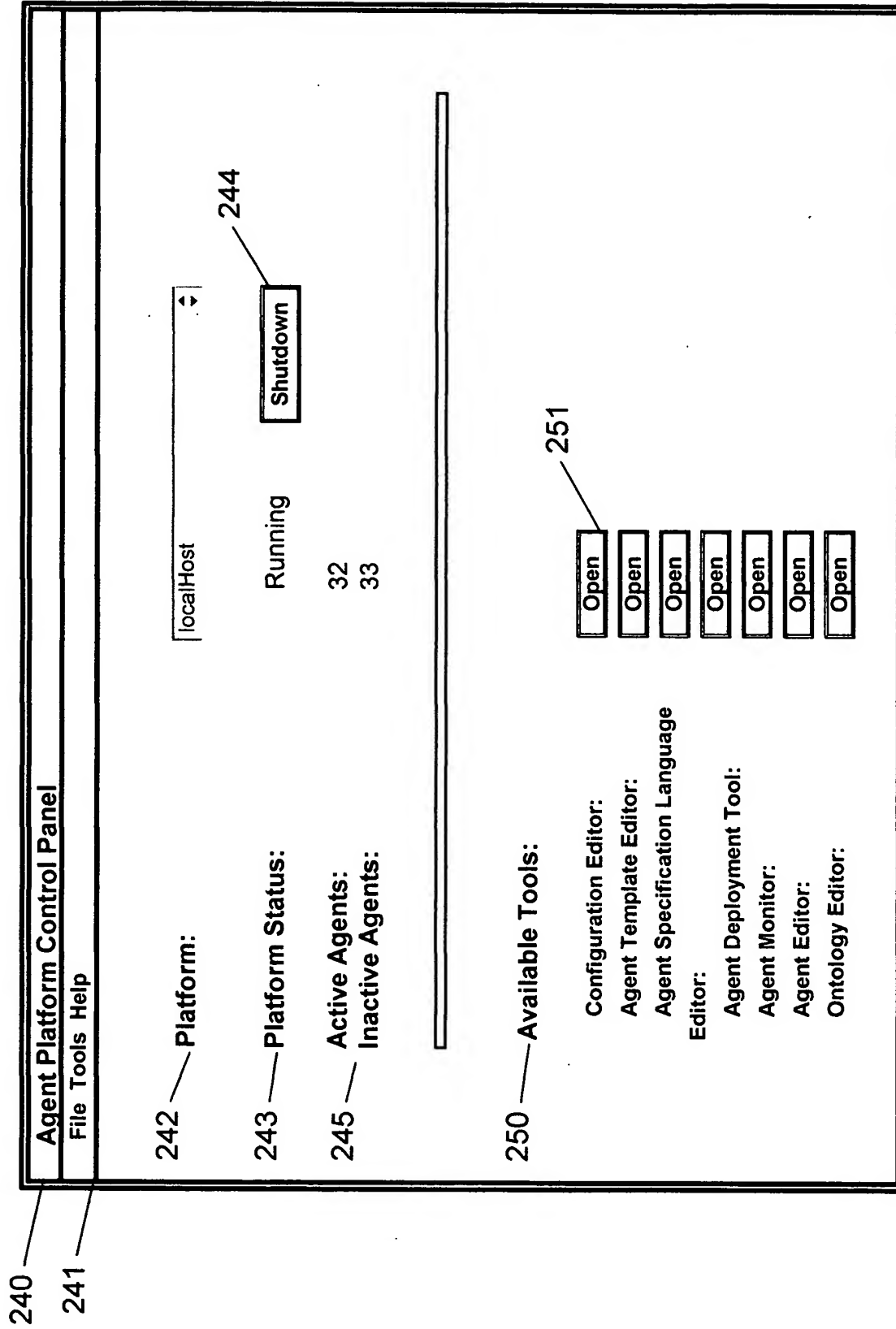


FIG. 21

Configuration Editor

File Edit Configuration Tools Help

Configuration Tables:

Platform

PlatformSrvs

MainlApps

PartsToolsInventoryService

CheckpointReaderService

TCPMessageTransport

SNMPMessageTransport

SimpleTextEncoder-Decoder

XMLEncoder-Decoder

TextMessageHandle

AssertRetractFactMsgHandler

SSLEncryption

Create New

Remove

Attribute

Value

service.serviceConfigPath	/service
service.factories	PlatformSrvs, MaintApps, TCPSrvs
service.directory-service-factory	PlatformSrvs
service.naming-service-factory	PlatformSrvs
service.transport-system-factory	TCPSrvs service.factory.class.PlatformSrvs
platform.PlatformServiceFactory	
service.factory.class.MaintApps	power.MaintAppsFactory
service.factory.class.TCPSrvs	message.impl.TCPServiceFactory
message.messageConfigPath	/message
message.defaultTransport	tcp
message.encoders	default, xml
message.default.encoder	default
message.handlers	text, assert_revert, kqml
message.default.handler	assert_revert
message.encrypters	ssl
message.default.encrypter	none
inference.interpreterConfigPath	/interpreters
inference.interpreters	patternMatcher
inference.defaultInterpreter	patternMatcher
ontology.ontologyPath	/ontology
ontology.ontologies	PowerPlant
ontology.default	PowerPlant

Name: service.factories

268

Add

Value:

PlatformSrvs, MaintApps, TCPSrvs

Remove

Description:

List of all service factory names supported by this platform

FIG. 22

The diagram illustrates the Agent Template Editor interface, divided into two main sections: a list of agent templates and a configuration window for a selected template.

Agent Templates List:

- 282** Create New
- 283** Remove
- 290** Agent Templates:
 - Facility Supervisor
 - Logistics Planner
 - Maintenance Engineer
 - Maintenance Truck
 - Part
 - Tool
 - Maintenance Schedule
 - Facility Checklist** (Selected)
 - Generator
 - Transformer
 - Relay
 - Switch
 - Breaker
 - Power Line
 - Distribution Substation
 - Alarm Monitor

Facility Checklist Configuration Window:

- 291** General
- 292** Attributes
- 293** Rules
- 294** Template Name: Facility Checklist
- 295** Description: This agent monitor information concerning personnel and equipment that may enter or exit part of a facility
- 296** Interpreter: PatternMatcher
- 297** Transport: TCP
- 298** Encoder: Simple
- 299** Semantics: Assert-Retract
- 300** Ontology: Power Plant
- 301** Use Encryption: ☒ X
- 302** Type: SSL

Agent Template Editor

File Edit Templates Help

Agent Templates:

Facility Supervisor	△
Logistics Planner	
Maintenance Engineer	
Maintenance Truck	
Part	
Tool	
Maintenance Schedule	
Facility Checkpoint	
Generator	
Transformer	
Relay	
Switch	
Breaker	
Power Line	
Distribution Substation	
Alarm Monitor	▽

Create New

Remove

301

General	Attributes	Rules
---------	------------	-------

302

Attribute Name:

Entry Area	△
Maintenance Engineer	
Credential	▽

303

New

304

Remove

Description:

305

Information About a Person that has just entered the checkpoint area

306

Type: Fact

307

Value: (John, Maintenance Engineer, Generator Area A)

308

Assign/Edit Value

File Edit Templates Help

Agent Templates:

<div> <div>△</div> <div> <div>Facility Supervisor</div> <div>Logistics Planner</div> <div>Maintenance Engineer</div> <div>Maintenance Truck</div> <div>Part</div> <div>Tool</div> <div>Maintenance Schedule</div> </div> </div>	<div> <div>▽</div> <div> <div>Facility Checkpoint</div> <div>Generator</div> <div>Transformer</div> <div>Relay</div> <div>Switch</div> <div>Breaker</div> <div>Power Line</div> <div>Distribution Substation</div> <div>Alarm Monitor</div> </div> </div>
---	---

Create New

Remove

Figure 1 illustrates a graphical user interface for defining attributes. The interface is organized into three main sections: General, Attributes, and Rules.

- General Section:**
 - Attribute Name:** A text field labeled 302, containing the text "Entry Area".
 - Type:** A dropdown menu labeled 306, currently set to "Fact".
 - Value:** A text field labeled 307, containing the text "(John, Maintenance Engineer, Generator Area A)".
- Attributes Section:**
 - A table with three rows, each representing an attribute:

Entry Area	△
Maintenance Engineer	
Credential	▽
- Rules Section:**
 - A text area labeled 308, containing the text "Information About a Person that has just entered the checkpoint area".

Navigation and Control Elements:

- Buttons:** "New" (303) and "Remove" (304) buttons are located at the top of the Attributes section.
- Arrows:** A right-pointing arrow (305) is located below the Type field. A left-pointing arrow (306) is located below the Value field.

Fact Entry Dialog

Ontology:

- Power Plant
 - Personnel
 - Name
 - Position
 - Assignment
 - Equipment
 - Facilities
 - Processes

Name: Maintenance Engineer

Description:

This agent monitor information concerning personnel and equipment that may enter or exit part of a facility

Data:

Attribute	Type	Value
Name	String	John
Position	String	Maintenance Engineer
Assignment	String	Generator Area A

Cancel Accept

313

Processes

Description:

Data:

Attribute	Type	Value
Name	String	John
Position	String	Maintenance Engineer
Assignment	String	Generator Area A

Cancel

Accent

318

Agent Template Editor		File Edit Templates Help																																																					
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Agent Templates:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Facility Supervisor</td> <td style="text-align: right; padding: 2px;">△</td> </tr> <tr> <td style="padding: 2px;">Logistics Planner</td> <td></td> </tr> <tr> <td style="padding: 2px;">Maintenance Engineer</td> <td></td> </tr> <tr> <td style="padding: 2px;">Maintenance Truck</td> <td></td> </tr> <tr> <td style="padding: 2px;">Part</td> <td></td> </tr> <tr> <td style="padding: 2px;">Tool</td> <td></td> </tr> <tr> <td style="padding: 2px;">Maintenance Schedule</td> <td></td> </tr> <tr> <td style="padding: 2px;">Facility Checkpoint</td> <td></td> </tr> <tr> <td style="padding: 2px;">Generator</td> <td></td> </tr> <tr> <td style="padding: 2px;">Transformer</td> <td></td> </tr> <tr> <td style="padding: 2px;">Relay</td> <td></td> </tr> <tr> <td style="padding: 2px;">Switch</td> <td></td> </tr> <tr> <td style="padding: 2px;">Breaker</td> <td></td> </tr> <tr> <td style="padding: 2px;">Power Line</td> <td></td> </tr> <tr> <td style="padding: 2px;">Distribution Substation</td> <td></td> </tr> <tr> <td style="padding: 2px;">Alarm Monitor</td> <td style="text-align: right; padding: 2px;">▽</td> </tr> </table> </div> <div style="width: 50%;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; padding-bottom: 5px;"> General Attributes Rules </div> <div style="padding-top: 10px;"> <p>Rule Name:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Check Tools-Parts</td> <td style="text-align: right; padding: 2px;">△</td> </tr> <tr> <td style="padding: 2px;">Valid Destination</td> <td></td> </tr> <tr> <td style="padding: 2px;">Credential Sensed</td> <td style="text-align: right; padding: 2px;">▽</td> </tr> </table> </div> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Description:</p> <p>Checks to see if engineer is assigned to work in this generator area</p> </div> <div style="margin-top: 10px;"> <p>Triggers:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Personnel</td> <td style="text-align: right; padding: 2px;">New</td> </tr> <tr> <td style="padding: 2px;">Work Order</td> <td style="text-align: right; padding: 2px;">Edit</td> </tr> <tr> <td></td> <td style="text-align: right; padding: 2px;">Remove</td> </tr> </table> </div> <div style="margin-top: 10px;"> <p>Precondition:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Invalid Destination</td> <td style="text-align: right; padding: 2px;">Edit</td> </tr> </table> </div> <div style="margin-top: 10px;"> <p>Tasks:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">SendAlarmMessage</td> <td style="text-align: right; padding: 2px;">New</td> </tr> <tr> <td></td> <td style="text-align: right; padding: 2px;">Edit</td> </tr> <tr> <td></td> <td style="text-align: right; padding: 2px;">Remove</td> </tr> </table> </div> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="border: 1px solid black; padding: 10px 20px;">Create New</div> <div style="border: 1px solid black; padding: 10px 20px;">Remove</div> </div>				Facility Supervisor	△	Logistics Planner		Maintenance Engineer		Maintenance Truck		Part		Tool		Maintenance Schedule		Facility Checkpoint		Generator		Transformer		Relay		Switch		Breaker		Power Line		Distribution Substation		Alarm Monitor	▽	Check Tools-Parts	△	Valid Destination		Credential Sensed	▽	Personnel	New	Work Order	Edit		Remove	Invalid Destination	Edit	SendAlarmMessage	New		Edit		Remove
Facility Supervisor	△																																																						
Logistics Planner																																																							
Maintenance Engineer																																																							
Maintenance Truck																																																							
Part																																																							
Tool																																																							
Maintenance Schedule																																																							
Facility Checkpoint																																																							
Generator																																																							
Transformer																																																							
Relay																																																							
Switch																																																							
Breaker																																																							
Power Line																																																							
Distribution Substation																																																							
Alarm Monitor	▽																																																						
Check Tools-Parts	△																																																						
Valid Destination																																																							
Credential Sensed	▽																																																						
Personnel	New																																																						
Work Order	Edit																																																						
	Remove																																																						
Invalid Destination	Edit																																																						
SendAlarmMessage	New																																																						
	Edit																																																						
	Remove																																																						

File Edit Templates Help

[illegible]

Remove

Figure 1 is a screenshot of a software interface for defining a rule. The interface is divided into several sections: General, Attributes, Rules, Rule Name, Description, Triggers, Precondition, and Tasks. The Rules section contains a table with columns for Check Tools-Parts, Valid Destination, and Credential Sensed. The Triggers section contains a list of triggers: Personnel, Work Order, and Invalid Destination. The Precondition section contains a list of preconditions: SendAlarmMessage. The Tasks section contains a list of tasks: SendAlarmMessage. The interface is annotated with numbers 321 through 335, indicating specific elements.

General	Attributes	Rules						
<p>Rule Name:</p> <table border="1"> <tr> <td>Check Tools-Parts</td> <td>△</td> </tr> <tr> <td>Valid Destination</td> <td></td> </tr> <tr> <td>Credential Sensed</td> <td>▽</td> </tr> </table>			Check Tools-Parts	△	Valid Destination		Credential Sensed	▽
Check Tools-Parts	△							
Valid Destination								
Credential Sensed	▽							
<p>Description:</p> <p>Checks to see if engineer is assigned to work in this generator area</p>								
<p>Triggers:</p> <table border="1"> <tr> <td>Personnel</td> </tr> <tr> <td>Work Order</td> </tr> <tr> <td>Invalid Destination</td> </tr> </table>			Personnel	Work Order	Invalid Destination			
Personnel								
Work Order								
Invalid Destination								
<p>Precondition:</p> <table border="1"> <tr> <td>SendAlarmMessage</td> </tr> </table>			SendAlarmMessage					
SendAlarmMessage								
<p>Tasks:</p> <table border="1"> <tr> <td>SendAlarmMessage</td> </tr> </table>			SendAlarmMessage					
SendAlarmMessage								

FIG. 26

320

Edit Relation Dialog

Name: Maintenance Engineer 321

Description:

322 This agent monitor information concerning personnel and equipment that may enter or exit part of a facility

Data:

Attribute	Type	Value
Name	String	John ...
Position	String	Maintenance Engineer ...
Assignment	String	?destination ...

323

324

329 Cancel

328 Accept

FIG. 27

Edit Condition Dialog

Predicates:

Invalid Destination	▲
	▼

New Predicate **Remove**

Left Hand Side:

?destination not equals **Operator:**

☐ Constant ☒ Variable
☐ Predicate ☐ Expression

Right Hand Side:

Generator Area A

☒ Constant ☐ Variable
☐ Predicate ☐ Expression

Expression Editor **Cancel** **Accept**

FIG. 28

350

Edit Task Dialog

351 **Task Name:** SendAlarmMessage

352 **Description:** Notify the alarm monitor of engineer arriving at the wrong location

353 **Provider:** Platform Services

354 **Adapter:** Send Message

345

Parameter	Type	Value
Subject	String	?name
Location	String	?destination
Type	String	Entry Violation
Message	String	Unauthorized Entry Attempted

356

358

359

Accept

Cancel

FIG. 29

360 Deploy New Agent Dialog

361 Name SuperCard Payer

362 Description Makes Periodic payment from by saving account the the my Super charge card company

363 Use Template Charge Card Payment Agent

364 Activate ☒ X

365 Modify Values

366 Modify Rules

367 Cancel

368 Create Agent

369